REMARKS

Claims 21-50 and 54-62 remain in the application.

The Examiner has rejected claims 21, 22, 24, 31-36, 39-50, and 54-57 under 35 U.S.C. §103(a) as being obvious over Nakagawa et al. (U.S. Patent 4,865,709, hereafter Nakagawa) in view of Miyata (U.S. Patent 5,519,373). This rejection is traversed.

The examiner's references to Hsu in the paragraph describing the Nakagawa reference are not understood. In any case, there is no suggestion to employ Miyata's Halbach magnet array 100 used as a magnetron to replace Nakagawa's bar-shaped alignment magnets 6A. Nakagawa is sputtering onto a multiplicity of substrates 3 arranged in a high aspect-ratio oblong area with similarly oblong and rectangular target 4 and magnetron 6B. Nakagawa's entire description is focused on the high aspect ratios of the oblong shapes. Nakagawa's small and linearly arranged substrates 3 allow his bar magnets 6A to be somewhat larger than the substrates 3 to provide a reasonably uniform magnetic field across the substrates 3 without impacting the overall size of the vacuum chamber. There is simply no suggestion for the desirability of a different configuration of Miyata's alignment magnets and certainly no suggestion for adapting the magnets of Miyata's magnetron.

Yet further, adapting Miyata's Halbach magnet array to Nakagawa's presents difficulties and problems, not advantages. If a single Halbach magnet array were used to align the multiple substrates 3 (three in number in FIG. 2, Miyata's Halbach array is circular and would need to extend far away from the oblong areas of Nakagawa's substrate arrangement, magnetron 14, and target 4. Such a large circular alignment magnet array would then require a larger and hence more expensive vacuum chamber to accommodate the much larger alignment magnet array. On the other hand, if the examiner is proposing that each of Nakagawa's multiple substrates be surrounded by a respective Halbach magnet array, the art fails to teach such a linear arrangement of multiple Halbach magnets for possibly very good reasons. The magnetic field created

externally of one Halbach magnet array is superimposed on the magnetic field created internally of the neighboring Halbach magnet array. It is considered highly unlikely that the external Halbach magnetic field is uniform across the entire internal area of a neighboring Halbach magnet array. That is, the multiple Halbach magnet arrays do not produce a uniform magnetic field on the multiple substrates, contrary to the teachings of Nakagawa.

Conceivably Miyata's circular Halbach magnetron could replace Nakagawa's rectangular magnetron 6B, but the claims separately recite a magnetron and do not recite a Halbach magnetron.

The base claims do not specifically require a Halbach magnet array although Miyata's magnet array 100 seems to be one. However, the rejected claims recite a structure, placement, or function of the magnet array that is not obviously transferrable from Miyata to Nakagawa and any arguments applied to a Halbach magnet in the combination rejection can be applied to the recited magnet array.

Base claim 31 and dependent claims 43, 49, and 56 further recite a collimator or collimating. The examiner attempts to read this limitation upon Nakagawa's ground shield 8. This reading is unwarranted and these claims should be held additionally allowable. The meaning of terms of the claims must be interpreted in light of the specification. Collimator 12 of FIG. 2 of the present application is totally different from a peripheral shield. No ordinary mechanic in the art would interpret Nakagawa's grounded shield 8 as a collimator. No art has been cited for described such a shield as a collimator. A dictionary definition of collimate is "to render parallel. (Webster's New Collegiate Dictionary, 1961). Nakagawa's shield does function as a collimator either as defined by the inventor or by a common dictionary. It restricts the sputter flux emitted from Nakagawa's target to a cone having a full angle of slightly less than 180°. Trajectories differing by any angular separation between 0° and 180° are not parallel and hence are not collimated.

The Examiner has rejected claims 23, 25-30, 37, and 38 under 35 U.S.C. §103(a) as being obvious over Nakagawa in view of Miyata and further in view of Boys et al. (U.S. Patent

4,500,409). This rejection is traversed.

Of the rejected claims, only claim 27 is a base claim. While Boys discusses sputtering of magnetic material, his apparatus apparently relies upon a coaxial magnetic coil 20 to control the sputtering from an annular target 13. Boys does not cure the deficiency of Nakagawa and Miyata in the structure recited in claim 27 of a stationary annular magnet array disposed around the perimeter of the surface of the substrate and generating a magnetic field that is parallel to and extends along the surface of the substrate or in parent claim 21 of an annular magnet array concentrically positioned around an outer perimeter of the substrate surface and generating a magnetic field that is substantially parallel to and extends along the substrate surface. . Even the process limitations found in Boys seem totally inapplicable to and unobviously combined with the totally different opposed electrodes of Nakagawa and Miyata.

Five new dependent claims have been added which clearly distinguish over the multi-substrate apparatus of Nakagawa's.

In view of the above amendments and remarks, reconsideration and allowance of all claims are respectfully requested. If the Examiner believes an interview would be beneficial, he is invited to contact the undersigned attorney at the listed telephone number, which is on California time.

Date: 13 March 2007

Respectfully submitted,

Correspondence Address
Customer Number: 60300
Law Offices of Charles Guenzer
P.O. Box 60729
Palo Alto, CA 94306

Charles S. Guenzer
Registration No. 30,640
(650) 566-8040